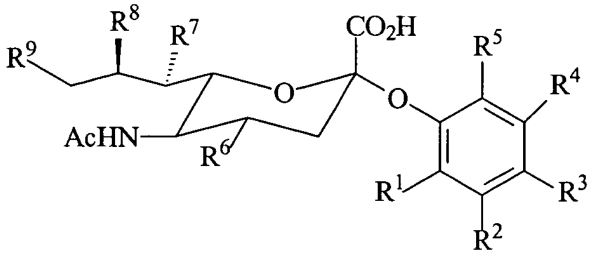
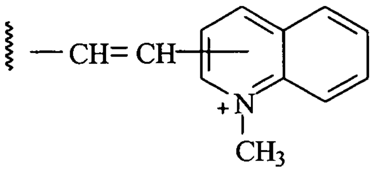
Claims

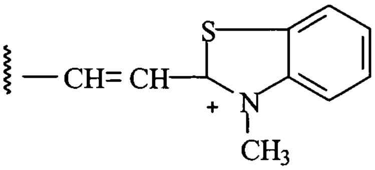
1. A chromogenic sialidase substrate compound, having a formula selected from the group consisting of General Structure I; General Structure II, General Structure IIIa; General Structure IIIb, General Structure IVa; General Structure IVb; and analogues, salts, and derivatives of the General Structures, wherein the General Structures are defined as follows:

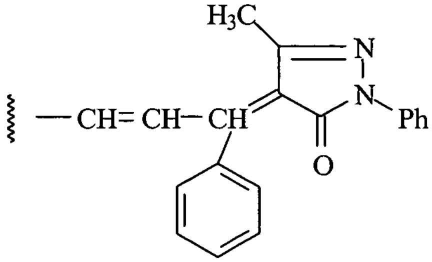


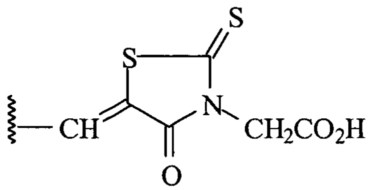
General Structure I

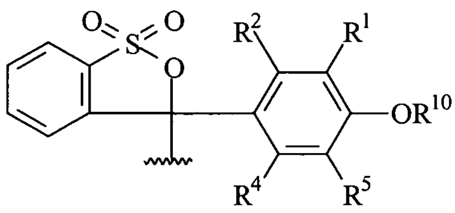
wherein, for General Structure I, R^1, R^2, R^4, and R^5 can each, independently, be selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, and CN, where j is an integer from 0 to 3; wherein R^3 = NO_2, CHO, $(CR^{12}{=}CR^{12})_kCN$ or $(CR^{12}{=}CR^{12})_kNO_2$, where k is an integer from 1 to 3, or

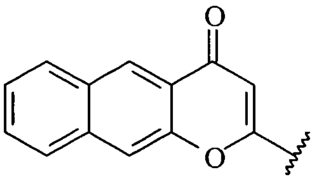


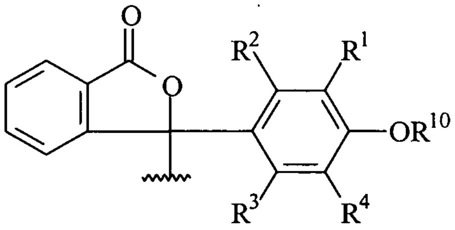






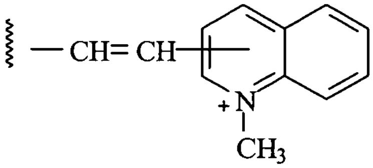


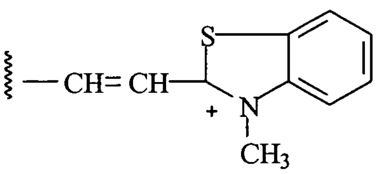


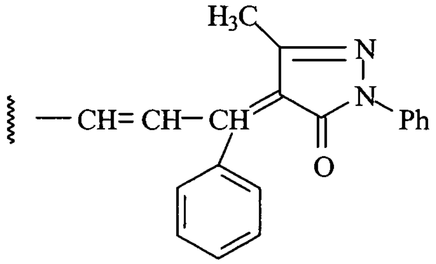


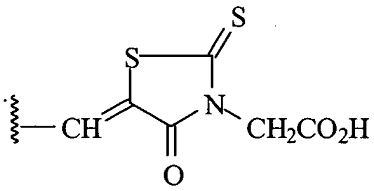
wherein, R^6, R^7, R^8, and R^9 can each, independently, be selected from the group consisting of H, N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F, SR^{10}, and $(CH_2)_xC(=NH)N(R^{10})_2$ where x is an integer from 0 to 3; wherein R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein $R^{11} = R^{10}$, OR^{10}, or $N(R^{10})_2$; wherein, R^{12} = H or $(CH_2)_n$; where n is an integer from 0 to 3;

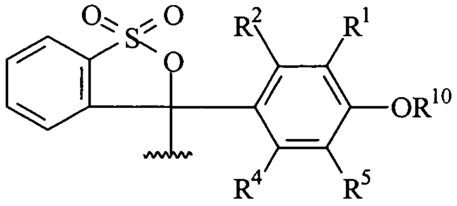
or, also for General Structure I, wherein, R^1, R^3, and R^5 can each, independently, be selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, or CN, where j is an integer from 0 to 3; wherein R^2 or R^4 = H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, CN, where j is an integer from 0 to 3, $(CR^{12}{=}CR^{12})_kCN$, and $(CR^{12}{=}CR^{12})_kNO_2$, where k is an integer from 1 to 3 or

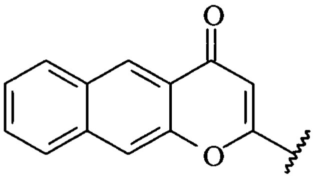


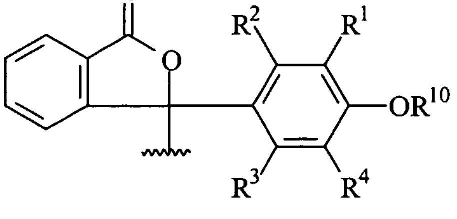






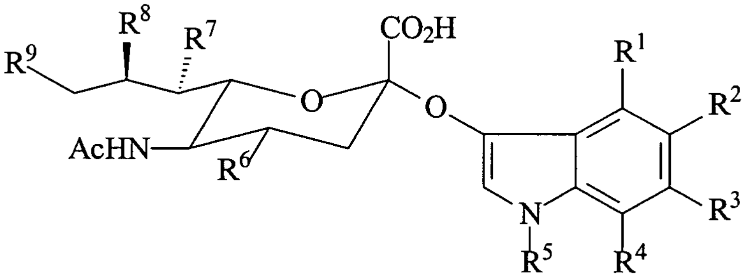






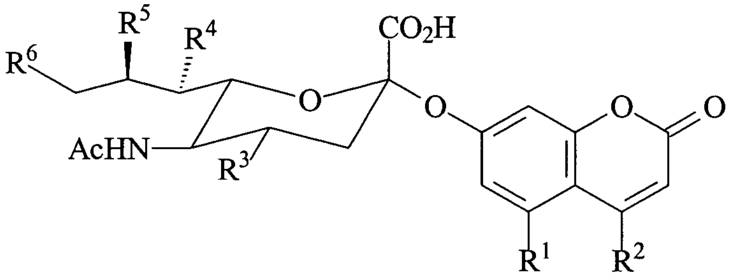
wherein, R^6, R^7, R^8, and R^9 can each, independently, be selected from the group consisting of H, N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F, SR^{10}, and $(CH_2)_xC(=NH)N(R^{10})_2$ where x is an integer from 0 to 3; wherein R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein $R^{11} = R^{10}$, OR^{10}, or $N(R^{10})_2$; wherein, R^{12} = H or $(CH_2)_n$; where n is an integer from 0 to 3;

or, also for General Structure I, wherein, R^1 or R^5 = H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, CN, where j is an integer from 0 to 3, $(CR^{12}{=}CR^{12})_kCN$ and $(CR^{12}{=}CR^{12})_kNO_2$, where k is an integer from 1 to 3; wherein, R^2, R^3, and R^4 can each, independently, be selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, and CN, where j is an integer from 0 to 3; wherein, R^6, R^7, R^8, and R^9 are each, independently, selected from the group consisting of H, N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F, SR^{10}, $(CH_2)_xC(=NH)N(R^{10})_2$, where x is an integer from 0 to 3; wherein R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein $R^{11} = R^{10}$, OR^{10}, or $N(R^{10})_2$; wherein R^{12} = H or $(CH_2)_n$; where n is an integer from 0 to 3;



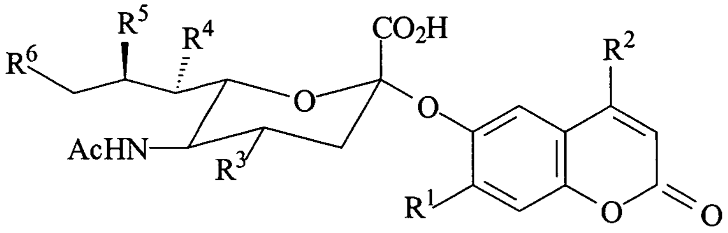
General Structure II

or, for General Structure II, wherein, R^1, R^2, R^3, and R^4 are each, independently, selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, and CN, where j is an integer from 0 to 3; wherein, R^5 = H or $(CH_2)_kCH_3$, where k is an integer from 0 to 4; wherein, R^6, R^7, R^8, and R^9 are each, independently, selected from the group consisting of H,N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F, SR^{10}, and $(CH_2)_xC(=NH)N(R^{10})_2$, where x is an integer from 0 to 3; wherein, R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer form 0 to 3; wherein, R^{11} = R^{10}, OR^{10}, or $N(R^{10})_2$;



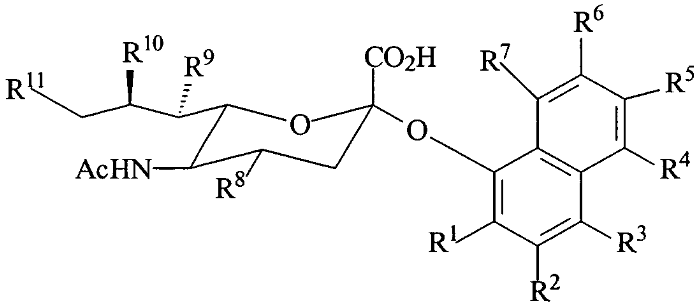
General Structure IIIa

or, for General Structure IIIa, wherein, R^1 = H, R^8, $OC(O)R^8$, NO_2, $NHC(O)R^8$, Cl, Br, I, F, CHO, $C(O)R^8$, $C(N\text{-}OH)NH_2$, OPO_3R^7, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^7$, OSO_3R^7, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^7$, or CN, where j is an integer from 0 to 3; wherein, R^2 = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein R^3, R^4, R^5, and R^6 are each, independently, selected from the group consisting of H, N_3, R^8, NO_2, $NHC(=NH)N(R^7)_2$, $NHC(O)R^8$, $C(O)R^8$, Cl, Br, I, F, SR^7, and $(CH_2)_xC(=NH)N(R^7)_2$, where x is an integer from 0 to 3; wherein R^7 = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein, R^8 = R^7, OR^7, or $N(R^7)_2$;



General Structure IIIb

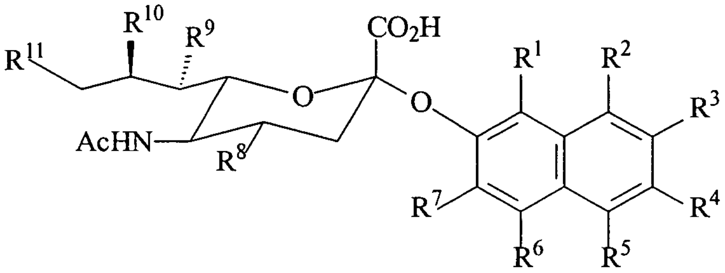
or, for General Structure IIIb, wherein, R^1 = H, R^8, $OC(O)R^8$, NO_2, Cl, Br, I, F, CHO, $C(O)R^8$, $C(N\text{-}OH)NH_2$, OPO_3R^7, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^7$, OSO_3R^7, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^7$, or CN, where j is an integer from 0 to 3; wherein, R^2 = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein, R^3, R^4, R^5, and R^6 are each, independently, selected from the group consisting of H, N_3, R^8, NO_2, $NHC(=NH)N(R^7)_2$, $NHC(O)R^8$, $C(O)R^8$, Cl, Br, I, F, SR^7, and $(CH_2)_xC(=NH)N(R^7)_2$, where x is an integer from 0 to 3; wherein R^7 = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein, R^8 = R^7, OR^7, or $N(R^7)_2$;



General Structure IVa

or, for General Structure IVa, wherein, R^1, R^2, R^3, R^4, R^5, R^6, and R^7 are each, independently, selected from the group consisting of H, R^{13}, $OC(O)R^{13}$, NO_2, Cl, Br, I, F, CHO, $C(O)R^{13}$, $C(N\text{-}OH)NH_2$, OPO_3R^{12}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{12}$, OSO_3R^{12}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{12}$, and CN, where j is an integer from 0 to 3; wherein, R^8, R^9, R^{10}, R^{11} are each, independently, selected from the group consisting of H, N_3, R^{13}, NO_2,

$NHC(=NH)N(R^{12})_2$, $NHC(O)R^{13}$, $C(O)R^{13}$, Cl, Br, I, F, SR^{12}, and $(CH_2)_xC(=NH)N(R^{12})_2$, where x is an integer from 0 to 3; wherein, R^{12} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer form 0 to 3; wherein, R^{13} = R^{12}, OR^{12}, or $N(R^{12})_2$;

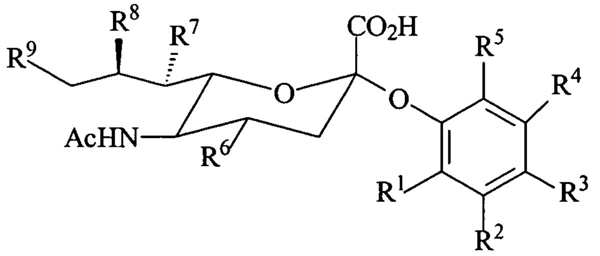


General Structure IVb

or, for General Structure IVb, wherein, R^1, R^2, R^3, R^4, R^5, R^6, and R^7 are each, independently, selected from the group consisting of H, R^{13}, $OC(O)R^{13}$, NO_2, Cl, Br, I, F, CHO, $C(O)R^{13}$, $C(N\text{-}OH)NH_2$, OPO_3R^{12}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{12}$, OSO_3R^{12}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{12}$, and CN, where j is an integer from 0 to 3; wherein, R^8, R^9, R^{10}, and R^{11} are each, independently, selected from the group consisting of H, N_3, R^{13}, NO_2, $NHC(=NH)N(R^{12})_2$, $NHC(O)R^{13}$, $C(O)R^{13}$, Cl, Br, I, F, SR^{12}, and $(CH_2)_xC(=NH)N(R^{12})_2$, where x is an integer from 0 to 3; wherein, R^{12} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer form 0 to 3; wherein, R^{13} = R^{12}, OR^{12}, or $N(R^{12})_2$,

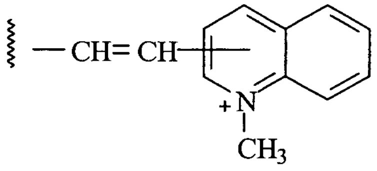
and analogs, salts, and derivatives thereof.

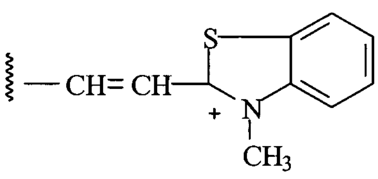
2. The compound, according to claim 1, wherein said compound has the following formula:

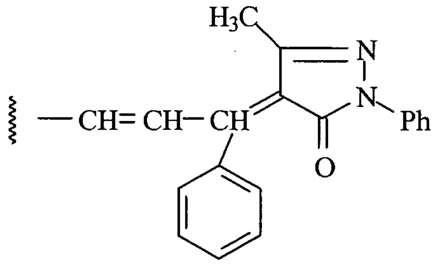


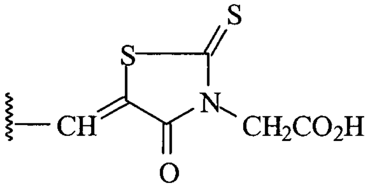
General Structure I

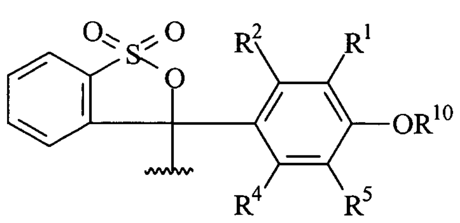
wherein, R^1, R^2, R^4, and R^5 can each, independently, be selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, and CN, where j is an integer from 0 to 3; wherein $R^3 = NO_2$, CHO, $(CR^{12}{=}CR^{12})_kCN$ or $(CR^{12}{=}CR^{12})_kNO_2$, where k is an integer from 1 to 3, or

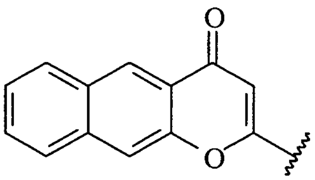


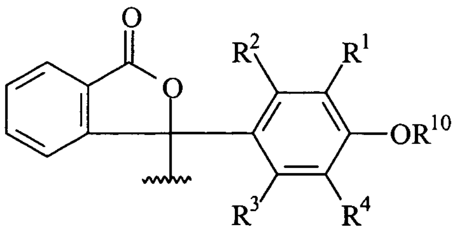






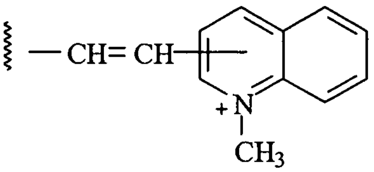


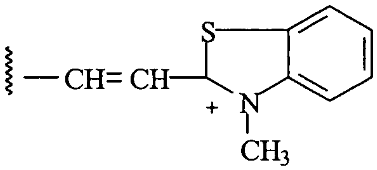


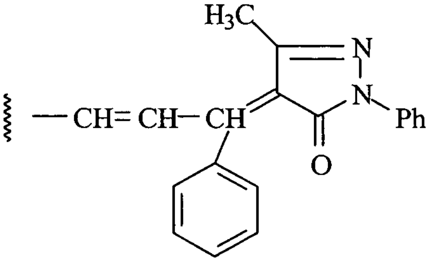


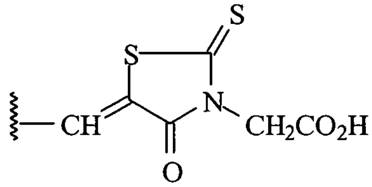
wherein, R^6, R^7, R^8, and R^9 can each, independently, be selected from the group consisting of H, N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F, SR^{10}, and $(CH_2)_xC(=NH)N(R^{10})_2$ where x is an integer from 0 to 3; wherein R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein R^{11} = R^{10}, OR^{10}, or $N(R^{10})_2$; wherein, R^{12} = H or $(CH_2)_n$; where n is an integer from 0 to 3;

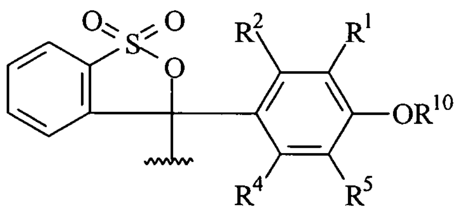
or, also for General Structure I, wherein, R^1, R^3, and R^5 can each, independently, be selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, or CN, where j is an integer from 0 to 3; wherein R^2 or R^4 = H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, CN, where j is an integer from 0 to 3, $(CR^{12}=CR^{12})_kCN$, and $(CR^{12}=CR^{12})_kNO_2$, where k is an integer from 1 to 3 or

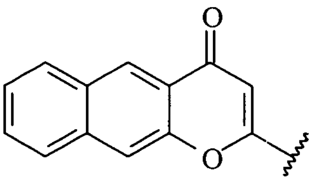


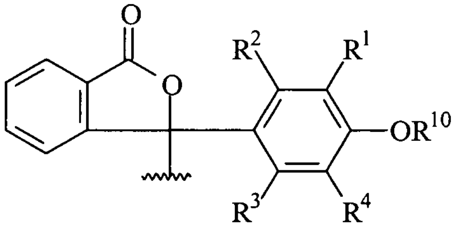








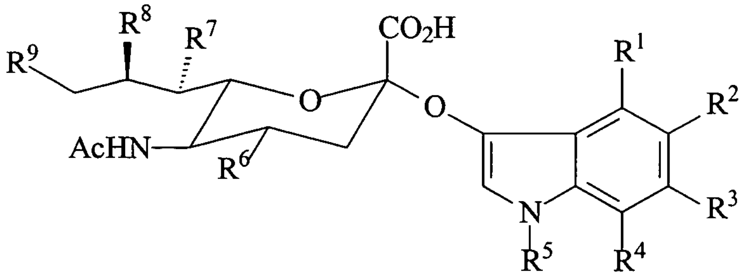




wherein, R^6, R^7, R^8, and R^9 can each, independently, be selected from the group consisting of H, N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F, SR^{10}, and $(CH_2)_xC(=NH)N(R^{10})_2$ where x is an integer from 0 to 3; wherein R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein $R^{11} = R^{10}$, OR^{10}, or $N(R^{10})_2$; wherein, R^{12} = H or $(CH_2)_n$; where n is an integer from 0 to 3;

or, also for General Structure I, wherein, R^1 or R^5 = H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, CN, where j is an integer from 0 to 3, $(CR^{12}{=}CR^{12})_kCN$ and $(CR^{12}{=}CR^{12})_kNO_2$, where k is an integer from 1 to 3; wherein, R^2, R^3, and R^4 can each, independently, be selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, $NHC(O)R^{11}$, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, and CN, where j is an integer from 0 to 3; wherein, R^6, R^7, R^8, and R^9 are each, independently, selected from the group consisting of H, N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F, SR^{10}, $(CH_2)_xC(=NH)N(R^{10})_2$, where x is an integer from 0 to 3; wherein R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein R^{11} = R^{10}, OR^{10}, or $N(R^{10})_2$; wherein R^{12} = H or $(CH_2)_n$; where n is an integer from 0 to 3.

3. The compound, according to claim 1, wherein said compound has the following formula:

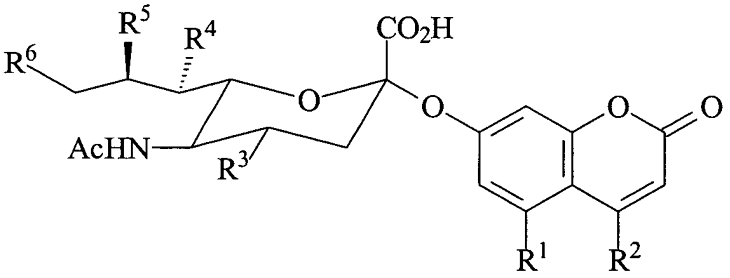


General Structure II

wherein, R^1, R^2, R^3, and R^4 are each, independently, selected from the group consisting of H, R^{11}, $OC(O)R^{11}$, NO_2, Cl, Br, I, F, CHO, $C(O)R^{11}$, $C(N\text{-}OH)NH_2$, OPO_3R^{10}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{10}$, OSO_3R^{10}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{10}$, and CN, where j is an integer from 0 to 3; wherein, R^5 = H or $(CH_2)_kCH_3$, where k is an integer from 0 to 4; wherein, R^6, R^7, R^8, and R^9 are each, independently, selected from the group consisting of H, N_3, R^{11}, NO_2, $NHC(=NH)N(R^{10})_2$, $NHC(O)R^{11}$, $C(O)R^{11}$, Cl, Br, I, F,

SR^{10}, and $(CH_2)_xC(=NH)N(R^{10})_2$, where x is an integer from 0 to 3; wherein, R^{10} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer form 0 to 3; wherein, $R^{11} = R^{10}$, OR^{10}, or $N(R^{10})_2$.

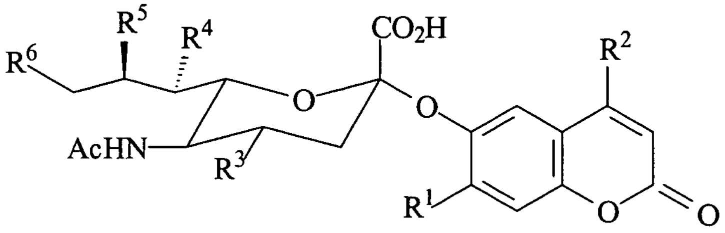
4. The compound, according to claim 1, wherein said compound has the following formula:



General Structure IIIa

wherein, R^1 = H, R^8, $OC(O)R^8$, NO_2, $NHC(O)R^8$, Cl, Br, I, F, CHO, $C(O)R^8$, C(N-OH)NH_2, OPO_3R^7, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^7$, OSO_3R^7, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^7$, or CN, where j is an integer from 0 to 3; wherein, R^2 = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein R^3, R^4, R^5, and R^6 are each, independently, selected from the group consisting of H, N_3, R^8, NO_2, $NHC(=NH)N(R^7)_2$, $NHC(O)R^8$, $C(O)R^8$, Cl, Br, I, F, SR^7, and $(CH_2)_xC(=NH)N(R^7)_2$, where x is an integer from 0 to 3; wherein R^7 = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein, $R^8 = R^7$, OR^7, or $N(R^7)_2$.

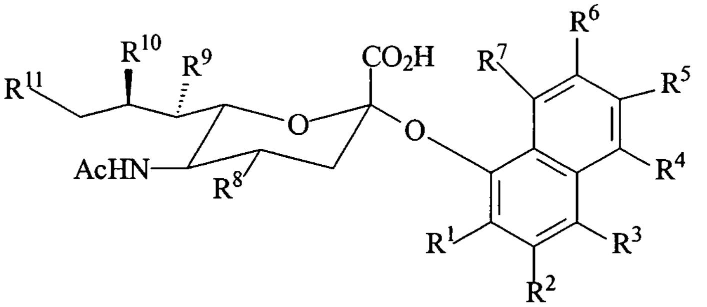
5. The compound, according to claim 1, wherein said compound has the following formula:



General Structure IIIb

wherein, $R^1 = H$, R^8, $OC(O)R^8$, NO_2, Cl, Br, I, F, CHO, $C(O)R^8$, $C(N\text{-}OH)NH_2$, OPO_3R^7, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^7$, OSO_3R^7, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^7$, or CN, where j is an integer from 0 to 3; wherein, $R^2 = H$, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein, R^3, R^4, R^5, and R^6 are each, independently, selected from the group consisting of H, N_3, R^8, NO_2, $NHC(=NH)N(R^7)_2$, $NHC(O)R^8$, $C(O)R^8$, Cl, Br, I, F, SR^7, and $(CH_2)_xC(=NH)N(R^7)_2$, where x is an integer from 0 to 3; wherein $R^7 = H$, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where m is an integer from 0 to 3; wherein, $R^8 = R^7$, OR^7, or $N(R^7)_2$.

6. The compound, according to claim 1, wherein said compound has the following formula:

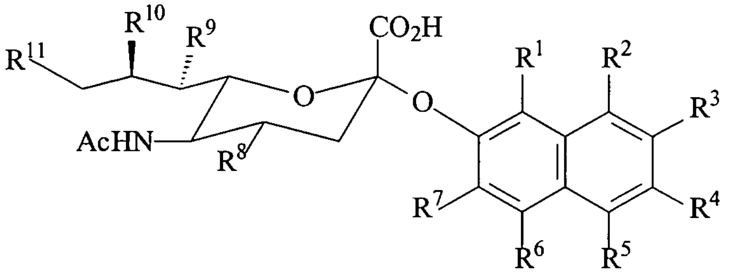


General Structure IVa

wherein, R^1, R^2, R^3, R^4, R^5, R^6, and R^7 are each, independently, selected from the group consisting of H, R^{13}, $OC(O)R^{13}$, NO_2, Cl, Br, I, F, CHO, $C(O)R^{13}$, $C(N\text{-}OH)NH_2$,

OPO_3R^{12}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{12}$, OSO_3R^{12}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{12}$, and CN, where *j* is an integer from 0 to 3; wherein, R^8, R^9, R^{10}, R^{11} are each, independently, selected from the group consisting of H, N_3, R^{13}, NO_2, $NHC(=NH)N(R^{12})_2$, $NHC(O)R^{13}$, $C(O)R^{13}$, Cl, Br, I, F, SR^{12}, and $(CH_2)_xC(=NH)N(R^{12})_2$, where *x* is an integer from 0 to 3; wherein, R^{12} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where *m* is an integer form 0 to 3; wherein, $R^{13} = R^{12}$, OR^{12}, or $N(R^{12})_2$.

7. The compound, according to claim 1, wherein said compound has the following formula:



General Structure IVb

wherein, R^1, R^2, R^3, R^4, R^5, R^6, and R^7 are each, independently, selected from the group consisting of H, R^{13}, $OC(O)R^{13}$, NO_2, Cl, Br, I, F, CHO, $C(O)R^{13}$, $C(N\text{-}OH)NH_2$, OPO_3R^{12}, $OPO_2(CH_2)_jCH_3$, $CH_2PO_3R^{12}$, OSO_3R^{12}, $OSO_2(CH_2)_jCH_3$, $CH_2SO_3R^{12}$, and CN, where *j* is an integer from 0 to 3; wherein, R^8, R^9, R^{10}, and R^{11} are each, independently, selected from the group consisting of H, N_3, R^{13}, NO_2, $NHC(=NH)N(R^{12})_2$, $NHC(O)R^{13}$, $C(O)R^{13}$, Cl, Br, I, F, SR^{12}, and $(CH_2)_xC(=NH)N(R^{12})_2$, where *x* is an integer from 0 to 3; wherein, R^{12} = H, $C(CH_3)_3$, $CH(CH_3)_2$, $CH_2CH(CH_3)_2$, $CH(CH_3)(CH_2)_mCH_3$, or $(CH_2)_mCH_3$, where *m* is an integer form 0 to 3; wherein, $R^{13} = R^{12}$, OR^{12}, or $N(R^{12})_2$.

8. A composition for measuring sialidase activity level, comprising a carrier and a chromogenic sialidase sustrate compound of claim 1.

9. A method of measuring sialidase activity in a sample comprising the step of contacting said sample with a composition comprising a chromogenic sialidase substrate compound of claim 1.

10. The method, according to claim 9, wherein said compound is a compound of claim 2.

11. The method, according to claim 9, wherein said compound is a compound of claim 3.

12. The method, according to claim 9, wherein said compound is a compound of claim 4.

13. The method, according to claim 9, wherein said compound is a compound of claim 5.

14. The method, according to claim 9, wherein said compound is a compound of claim 6.

15. The method, according to claim 9, wherein said compound is a compound of claim 7.

16. A method of making a composition for measuring sialidase activity comprising the step of admixing a carrier with a chromogenic sialidase substrate compound of claim 1.

17. A method for detecting or monitoring a sialidase-related disease in a human or animal, wherein siad method comprises measuring sialidase activity by contacting a fluid sample from said human or animal with a chromogenic substrate compound of claim 1.

18. The method, according to claim 17, wherein said compound is a compound of claim 2.

19. The method, according to claim 17, wherein said compound is a compound of claim 3.

20. The method, according to claim 17, wherein said compound is a compound of claim 4.

21. The method, according to claim 17, wherein said compound is a compound of claim 5.

22. The method, according to claim 17, wherein said compound is a compound of claim 6.

23. The method, according to claim 17, wherein said compound is a compound of claim 7.

24. The method, according to claim 17, wherein said sialidase is bacterial sialidase in bacterial vaginosis.

25. The method, according to claim 17, wherein said sialidase is bacterial sialidase in periodontal diseases.

26. The method, according to claim 17, wherein said sialidase is bacterial sialidase in *Pseudomonas aeruginosa* infection.

27. The method, according to claim 17, wherein said sialidase is viral sialidase in influenza virus infection.

28. The method, according to claim 17, wherein said sialidase is human sialidase.

29. The method, according to claim 17, wherein said sialidase is trans-sialidase in *Trypanosoma cruzi* infection.